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The transformation of logistics into e-logistics with the example of electronic freight exchange

Od logistyki do e-logistyki na przykładzie Elektronicznej Giełdy Towarowej

Streszczenie: Obecnie wykorzystanie technologii informatycznych może uczynić nasze życie lepszym i łatwiejszym, a rozwój Internetu może zasadniczo zmienić sposób działalności w firmach. Podmioty świadczące usługi logistyczne widzą potrzebę zmiany tradycyjnego modelu logistycznego na model e-logistyki. Jest to konieczne w celu dostosowania się do dynamicznych zmian w świecie globalnego handlu elektronicznego. Obecna gospodarka cyfrowa jest napędzana dużą ilością informacji, nowymi narzędziami ICT i technologiami wykorzystywanymi przez wszystkich do osiągnięcia rozwoju działalności. Korzystanie z e-logistyki może zminimalizować koszty nabycia, przesyłania, odbioru i sprzedaży nie tylko towarów, ale także usług. Celem niniejszego artykułu jest zdefiniowanie pojęć i określenie znaczenia wykorzystania systemów e-logistyki w biznesie na przykładzie Elektronicznej Giełdy Towarowej (EGT). W pierwszej części opracowania autorzy wyjaśniają różnice między logistyką i e-logistyką. Kolejna część pracy prezentuje aspekty i założenia dotyczące e-logistyki. Dalejsza część artykułu skoncentrowana została na zbadaniu aktualnej sytuacji w zakresie wykorzystania systemów e-logistyki na przykładzie EGT, efektem czego jest analiza porównawcza wybranych elektronicznych giełd towarowych.

Słowa kluczowe: e-logistyka, systemy informatyczne, Rumunia.

Summary: Nowadays, the use of Information Technologies Systems can make our life better and easier, as the incredible growth of the Internet is changing the way corporations conduct their business. Logistic service operators see the need to change the traditional logistics system into e-logistics. It is necessary to accommodate the dynamic changes in the commercial world. The current digital economy is driven by modern information and new ICT tools, new technologies used by everyone for stronger development of their activities. Using e-logistics may minimize the costs of acquisition, transmission, reception and sales. The purpose of this article is to analyze the notion and importance of using e-logistic systems in business with the example of Electronic Freight Exchange (EFX). In the first part of the paper, the authors explain the difference between logistics and e-logistics. The next part of the paper is devoted to presenting the aspects and fundamentals of e-logistics and their advantages as well. Moreover, the areas which might be improved are indicated. The further part of the paper is focused on the situation in e-logistics systems with the EFX example. In that section a comparative analysis of selected electronic freight exchanges can be found. This study brings its contribution to the understanding of the changes in logistics, in particular, in the EFX systems.

Keywords: e-logistics, IT systems, Romania

1. Introduction

Technological progress, especially the access to the Internet has stimulated the development of many services, especially in business. People use Internet services more and more often for entertainment and shopping, but also to conduct business activities enabling them to save money and time. In recognition of the increasing importance of globalization and the resulting need for greater, faster, and more flexible communications, a framework is required to allow any company to establish itself in no time or make an optimal use of their applications and function efficiently at a minimal cost input.

The matter of logistics in general and the matter of business logistics in particular, arouses interest in the context of globalization of the market and the vast reconfigurations of the world. This article presents the evolution of the “e-logistics” concept in many contexts and it highlights the dynamic elements of each context in the definition of the concept¹.

In the first part of the paper, the authors present the concept of e-logistics, definitions of logistics, e-logistics; the process of solving logistic problems is described. Additionally, the logistic aspects described concern controlling and executing the flow of goods, services, with related information from sources to destinations. In the next section the fundamentals of e-logistics are presented, together with their advantages. The most significant part is the analysis concerning EFX. Freight exchanges create a meeting point for freighters and consigners. Consigners may advertise their freight tasks for shipment, while freighters can make their bid for cargo holds. Moreover, at these exchanges the most suitable offer may be selected by using different search algorithms (Kovács 2011)².

EFX issues and e-logistics play an important role in the development of e-logistics in Europe. The proof of this can be the e-Freight Integrated Project started on 1 January 2010, bringing together 30 partners from 14 Member States and Norway, for a 4-year program, addressing the development, validation and demonstration of innovative e-freight capabilities³.

¹ Schileru I., Accumulations and development in commercial logistics, „Amfiteatru Economic”, 2008, Nr 24, p. 41.

² Gábor Kovács, Freight and warehouse exchanges: modern logistic information systems, Vol. 2, No. 1, pp. 43–54, Poznań 2012, pp. 44.

³ <http://www.efreightproject.eu/default.aspx?articleID=1120>

2. Logistics and E-logistics Definition

Logistics may be considered as the science and the art of the suitability of a vast context of requirements: the assurance of a materiality (“what”), in a desired quantity (“how much”), in specified conditions (“how”), at a desired place (“where”) and at a desired moment (“when”)⁴.

Logistics operations are able to manage independent operations, such as transport, storage, handling and others. Modern logistics integrates the modern information technology, integrated transport, storage, handling, packaging, distribution, circulation, processing, reverse logistics, customer service and logistics functions. The key factor is to use modern information technology and logistics technology to transform the traditional logistics process, control and innovation⁵.

Logistics is the process of planning, implementing and controlling the efficient and effective flow and storage of goods, services, and related information from the point of origin to the point of consumption for the purpose of conforming to consumer requirements.

E-logistics is applying logistics concepts using the Internet. E-logistics means processes necessary to transfer the goods sold online to the customers⁶.

A more sophisticated aspect of e-logistics is the wide-ranging topic of supply chain integration that eliminates intermediaries (such as wholesalers or retailers) and fosters the emergence of new players, like logistics operators who adapt traditional logistics chains to meet the requirements of e-business⁷.

E-logistics describes three core back-end processes required to get an order from the “buy” button to the bottom line: warehousing, delivery, and transportation, and customer interaction (usually handled through a call centre where customers can ask questions, place orders, check on the order status, and arrange for returns). In many cases, a different vendor handles each of these three separate functions. Managing them all successfully and simultaneously requires an in-depth understanding of each discipline. Integrating them with one another and with a corporation’s existing systems is even tougher⁸.

The following Figure 1. presents the main elements that make up the e-logistics process.

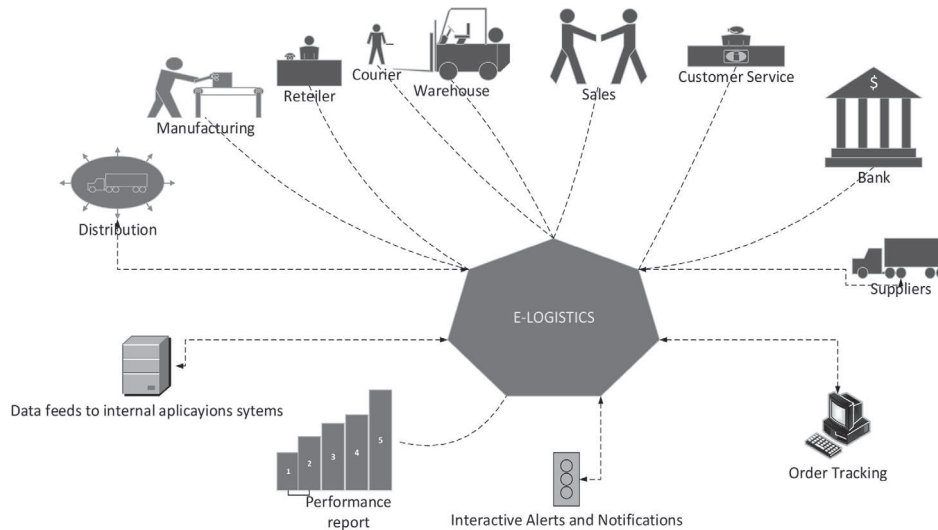
⁴ Op.cit.

⁵ Klug S., Logistiguru går i pension, 2014, <http://www.hb.se/Om-hogskolan/Aktuellt/Nyhetsarkiv/2014/Juni/Logistiguru-gar-i-pension/>.

⁶ Groznik A., E-logistics: informatization of slovenian transport logistics cluster, 2nd wseas int. conf. on management, marketing and finances (mmf’08), Harvard, Massachusetts, USA, March 24–26, 2008, p. 139.

⁷ Op. cit.

⁸ Forbes: <http://what-when-how.com/>.



E-logistics uses the Web-based technologies to support the material acquisition, warehousing and transportation process. It enables distribution to couple routing optimization with inventory- tracking information⁹.

In an e-commerce context e-logistics refers to the delivery of ordered goods, also known as fulfilment. This can be done through the use of e-technology. The introduction of e-business in logistics results in e-logistics.

The differences between logistics and e-logistics may be summarized as in Table 1.

Table 1. The difference between logistics and e-logistics¹¹

	Logistics	E-logistics
Shipment Type	Bulk	Parcel
Customer	Strategic	Unknown
Customer Service	Reactive, Rigid	Responsive, Flexible
Distribution Model	Supply-driven Push	Demand-driven Pull
Inventory/ Order Flow	Unidirectional	Bidirectional
Destinations	Concentrated	Highly Dispersed
Demand	Stable Consistent	Highly Seasonal, Fragmented
Orders	Predictable	Variable

⁹ Upadhye A., E-logistics, 2012, <http://www.slideshare.net/amitupadhye/e-logistics-14978887>.

¹⁰ Quirk A., Forder J., Bentley D., Electronic Commerce and the Law, John Wiley & Sons Ltd, 2003.

¹¹ Wang J., Yang D., Guo Q., Huo Y., Taking Advantage of E-Logistics to Strengthen the Competitive Advantage of Enterprises in China, The Fourth International Conference on Electronic Business (ICEB2004), Beijing 2004, <http://iceb.nccu.edu.tw/proceedings/2004/Paper/CN081-paper.pdf>.

3. The Role of Information and Communication Technology in E-logistics

In the background of the changing situation on local and global markets of delivery and sales, companies more often use Internet tools enabling them to realize electronic transactions with partners in the supply chain. Changes in the management of a supply chain happen with the development of clients' needs and the technological possibilities of cooperating partners. The globalization of economic companies' cooperation (e.g. in delivery, production and distribution processes), technological growth and innovative methods of economic activity, as well as stronger competition and shorter product life cycles on markets have caused a need for changes in the dimensions of supply chains' activities — shorter time of order realization, global scope of activity, higher flexibility and durability. Electronic data interchange through the Internet has become one of the fundamental tools of supporting business processes. It has caused an epoch-making change for clients' values – independent access to information about products' flow and localization of supply chain's partners. The growing share of electronic commerce in commerce in general has caused a need for online access to logistic services among suppliers and recipients on the market. The growth of electronic commerce evolving towards e-business has brought about a natural need for the development of processes of the commodity flow service, in the area of the company front-office (e.g. sales, marketing, client service), as well as back-office (purchasing, warehousing, transport, production and co-production). The electronic data interchange between partners lets them cooperate in real time and create an integrated supply chain. Efficient, reliable and effective functioning of supply chains requires, apart from good management of physical products flow, set under functional and organizational aspect, a system of information flow. Experiences gathered in the area of e-business make it possible to distinguish the following business models which define the relations of market's partners:

1. a business to business model (B2B) – this model embraces main economic contacts, it means their preparation, assessment of partners' risk, negotiating and realization of order until full payment.
2. a business to customer model (B2C) – it concerns financial services (e.g. electronic banking, insurances, investment funds), non-financial services (e.g. tourist services) and trade centres (the Internet shops).
3. a customer to customer model (C2C) – this model mainly includes hobby contacts or attendance at auctions.

Evolving towards virtual organization, a particular company could achieve higher effectiveness, extend its sources base and join new markets worldwide. The main advantages of e-business include: lower costs of functioning, efficient management of the supply

chain, shorter time cycles and quicker access to the market by product, new possibilities of promotion, improvement of client services, extended productivity of employees. Among the problematic aspects of e-business use there are: data safety, durability and capacity of connections, communication standards, access to historical data. Partners in global chains and delivery nets use many modern solutions of e-logistics for business activity. Electronic services of logistic processes run by companies in the supply chain require the use of electronic tools accessible through the Internet¹².

E-logistics tools you can see in the Table 2.

Table 2. E-logistics tools¹³

E-logistics elements	Description
e-ordering	Via Web, e-market, auction, collaborative system, mobile apps, etc.
EDI Requirements	Using standards of data exchange
Activated order/Shipment number	Usually an imperative requirement. Various Generators
Activation of Logistics services -order/pick/pack -despatch -transport, etc.	Activation of a specific set or single operation from warehouse, transport operator, delivery agent etc through shipper, broker, customs agent, and/or sub-contractor or own fleet
Barcode or RFID scan	Optional – dependent on requirements
Track and Trace capability	Optional – dependent on requirements
Call Centre CRM ability	Optional – dependent on requirements
Automatic Logistic Performance calculator	Can save many hours per week in evaluating if functionality is available.
Client Accounting	Commonly an e-market and portal offering,
Quarterly reporting	Specified financials/service performance or customers, etc.

4. Problem Statement

E-logistics implementations in companies have a lot of references in literature and therefore this paper can be useful in identifying the role it may play by investigating the

¹² Barcik R., Jakubiec M., E-LOGISTICS – ASPECTS OF FUNCTIONING, „Acta academica karviniensia”, 2012, No.1, <http://www.opf.slu.cz/aak/2012/01/Barcik.pdf>.

¹³ E-Logistics: The Slowly Evolving Platform Undrepinning E-Business, <http://what-when-how.com/information-science-and-technology/e-logistics-the-slowly-evolving-platform-undrepinning-e-business-information-science/>.

EFX (Electronic Freight Exchange)¹⁴. An EFX is an online service for freight haulers/haulage companies, logistics providers, and freight forwarders. It allows transport companies/haulers to search advertisements for freight, and freight forwarders/logistics providers to offer freight to be transported. These systems provide a platform that allows carriers to communicate freight traffic information to fellow operators, such as transporters, forwarders and logistics companies. They allow forwarders to advertise their freight either privately or publicly to a large number of freight operators looking for loads. They also allow freight operators to offer vehicle space. Online systems are normally subscription-based with a small charge for advertising (posting) and searching (consulting)¹⁵.

The research problem concerns the analysis and evaluation of EFX from the user perspective, based on selected EFX operating in Central and Eastern Europe.

5. The Goal of the Study

The problem described above definitely leads to a considerable need to conduct research on EFX. Since the process of the implementation of new e-logistic solutions has already started, the authors have decided to focus on the EFX systems which are popular in Europe, especially in Poland. The goal of this study is to critically examine EFX solutions to determine the usability of EFX. This research was conducted as part of a larger study on the role of e-services in Poland. In the current development in the EFX systems context, deepened by the difficult economic situation, managers must take into account the need for using e-solutions to improve doing business.

6. Research Questions

This paper aims to investigate which EFXs should be used to affect the provision and quality of services provided and facilitate efficient resource utilization in transport companies. The following essential questions are addressed:

- What are the most popular EFXs in Central and Eastern Europe?
- What features do the EFXs used by Polish users have?
- What are the advantages and disadvantages of EFXs from the perspective of users (transport companies, shippers)?

¹⁴ Wang Y., Potter A., Naim M., Electronic marketplaces for tailored logistics, „Industrial Management & Data Systems”, 2007, Vol. 107 Iss: 8, p. 1170; Nandiraju Srinivas, Regan Amelia, Freight Transportation Electronic Marketplaces: A Survey of the Industry and Exploration of Important Research Issues, 84th Annual Meeting of the Transportation Research Board, and publication in Transportation Research Record, 2003, p.9; Ian Daviesa, Robert Masona, Chandra Lalwani, Assessing the impact of ICT on UK general haulage companies, International Journal of Production Economics, 2007, Volume 106, Issue 1, p. 16.

¹⁵ Electronic freight exchange, http://itlaw.wikia.com/wiki/Electronic_freight_exchange.

7. The Research Methodology

Several directions of research may be identified in the literature concerning the EFX platform. One of the directions investigates how e-logistics helps managers to improve the logistic processes.

To deal with the issue, the theoretical framework of using EFX and Cloud Computing systems was examined. Subsequently, this paper reflects on the development of online EFX systems. The data for conducting the study was collected from primary sources: company reports, official websites of companies and universities, as well as from secondary sources, such as books, articles and journals. The technical aspects were examined by testing selected available EFX systems.

In order to obtain the answer to the second question, a comparative analysis of available models of EFX was carried out. A written query led to the identification of several EFX systems which are implemented in CC. They are: ATI, Timocom, Teleroute, ati.su, Trans.eu.

8. Electronic Freight Exchange

A freight exchange is an online service for transport operators, logistics providers and freight forwarders. It allows transport companies to search for freight, and freight forwarders/logistics providers to offer freight to be transported. These online systems are normally subscription-based applications charging for advertising and searching.

In the seventies, the first attempts were made to create transport exchanges. The authors want to maximize the use of spare capacity, operated by computer data banks, that were optimally combined with the charge for transport. Such work would be aiming for a better use of transport units. The following obstacles may occur during exchanges; lack of adequate access to the exchange of data, limited confidence in the reliability of partners, cross-border barriers, fear of disclosure of trade data and a limited number of applicants¹⁶.

The first freight exchanges that appeared on the market possessed one key feature, namely they greatly facilitated the process of finding a suitable transport offer, as far as both shippers and carriers were concerned. With time, and with the development of the Internet, also the TSL (Transport- Spedition- Logistic) industry has developed. At the same time the need for shippers and drivers has increased. Currently, freight exchanges is multi-platform access, providing an ever-wider range of services. More and more of them

¹⁶ Niedzielski P., Łuczak A., *E-business w transporcie – wybrane aspekty* [w:] *Zeszyty Naukowe nr 393 Problemy transportu i logistyki*, red. naukowy I. Dembińska-Cyran, Wydawnictwo Naukowe Uniwersytetu Szczecińskiego, Szczecin 2006, s. 87.

are already available also through mobile devices, e.g. Smartphones and tablets, making it possible to track both current transport offers and the latest industry information from any place. The constantly changing market requires new policies and new, innovative solutions¹⁷.

9. Forms of Freight Exchanges

Open freight exchanges are platforms operated independently of shippers for the brokerage of loads and load space on a day-to-day business basis. They can be accessed by all the companies registered with the corresponding service provider. They function as “blackboards” posting information concerning available shipments and transport capacities. The contractual negotiations are then conducted directly between the partners.

Closed freight exchanges are run by major shippers and freight forwarders. They focus on high-volume contracts. Only transport companies and freight forwarders selected by the customer may participate¹⁸.

10. The comparative analysis of Selected EFX in Central and Eastern Europe¹⁹

There are numerous transport exchanges worldwide. However, in this business it is important to suit the specifics of the local market, including in particular the cultural and legal factors. The result is that EFXs specialize in a given geographical area. It is no different with regard to Central Eastern Europe. The analysis of the Internet and literature sources, made it possible to select the leading EFX. The selection criterion was the number of users or the number of operations (Figure 2).

The characteristics of particular transport exchanges are presented in the tables below (Tabele 3–7). As it can be seen, the leading companies in the market are TRANS.eu and Teleroute, because they have the largest number of users, the largest number of offers, and they are available in the greatest number of languages.

17 <http://gielda-ladunkow.com/11/gieldy-transportowe-przewoznika-spedytora/>.

18 <https://www.iru.org/cms-filessystem-action/reso-ctm/GUIDELINESfreight2013.pdf>.

19 http://www.truck.pl/pl/article/575/czas-za%C5%82adowni%C4%87-raport-internetowe-gie%C5%82dy-transportowe_gb_1049.

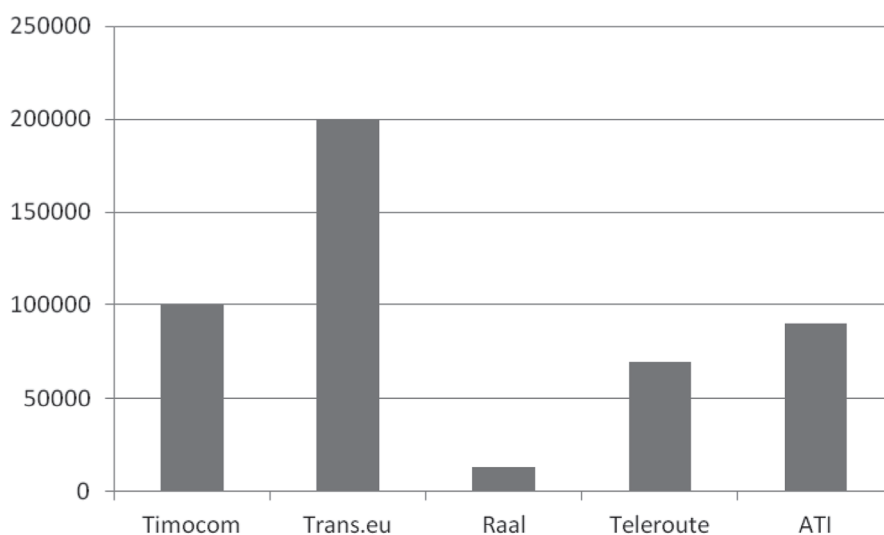


Figure 2. The number of users of selected Electronic Freight Exchange²⁰

Table 3. The characteristics of ATI²¹

Name of EFX	ATI
Website address	http://www.ati.su
Range/number of countries	Ukraine, Russia, Kazakhstan, Uzbekistan, Georgia
Number of users	90,000
Number of offers	60,000
Free evaluation exchange	no
Activation Fee	yes
Subscription	paid version and a free of charge
Languages	Ukrainian
Additional information	

Source: Own elaboration

²⁰ Paszkiewicz B, Długi i dłużnicy na giełdach transportowych, 2011-07-27, <http://www.trans.info/message/view/13319.html>.

²¹ <http://www.ati.su/en/Content.aspx?Path=About>.

Table 4. The characteristics of Timocom^{22, 23}

Name of EFX	TC Truck & Cargo
Website address	www.timocom.com
Range / number of countries	Europe/44
Number of users	100,000
Number of offers	up to 450,000 per day
Free evaluation exchange	yes, 4 weeks
Activation Fee	yes
Subscription	119.9 euro per month
Languages	24
Additional information	More than 516 million tons of freight per annum, the system has a security net TimoCom Secure. Timocom also offers TC eBid, a tendering platform that simplifies the business conducted between companies

Source: Own elaboration

Table 5. The characteristics of Teleroute^{24, 25}

Name of EFX	Teleroute
Website address	www.teleroute.co.uk
Range/number of countries	Europe
Number of users	70,000
Number of offers	200,000 per day
Free evaluation exchange	Demo version free of charge
Activation Fee	Lack of data
Subscription	Paid only for the received data – 1.75 euros per offer (a package of 15 bids for 27.5 euros must be bought)
Languages	Lack of data
Additional information	Launched in France in 1985

Source: Own elaboration

²² Jurczak M., Giełda kontra giełda, „Transport i Spedycja”, 2011 nr 4, s. 30.

²³ www.timocom.com.

²⁴ http://teleroute.com/en_en/teleroute-freight-exchange.

²⁵ <http://espedytor.com/index.php/giedy-ladunkow/6-teleroute>.

Table 6. The characteristics of Raal²⁶

Name of EFX	Raal
Website address	www.raal.pl
Range / number of countries	Europe / 31
Number of users	13,000
Number of offers	100,000 per day
Free evaluation exchange	yes, one month
Activation Fee	Lack of data
Subscription	Lack of data
Languages	10
Additional information	Raal has been providing priceless information regarding loading efficiency for 20

Source: Own elaboration

Table 7. The characteristics of Trans.eu²⁷

Name of EFX	Trans.eu
Website address	www.trans.eu
Range/number of countries	Europe
Number of users	200,000
Number of offers	1,000,000
Free evaluation exchange	Yes, 30 days free of charge
Activation Fee	yes, 220 PLN net
Subscription	158 PLN per month
Languages	24
Additional information	Trans.eu System is a set of tools for Carriers, Freight Forwarders and Loaders from across Europe allowing secure cooperation. Since 2005 over 480 thousand companies from Europe and beyond have registered in Trans.eu. Within last year over 35 million offers were posted in Trans.eu System, including 82% load offers and 18% vehicle offers.

Source: Own elaboration

According to the carried out research the two most popular EFXs, in terms of the number of users, are Trans.eu and Timocom.com. In Figures 3. and 4. there are screenshots presented of both systems.

²⁶ <http://www.raal.pl/en>.

²⁷ <http://www.trans.eu/en/trans-eu-system>.

The screenshot shows the Trans.eu website interface. At the top, there is a banner for 'GIEŁDA TRANSPORTOWA' with 'KAZDEGO DNIA 150 000 OFERT FRACHTÓW I PRZEWOZÓW'. Below the banner, there are navigation icons for 'Zgłoś ładunek', 'Zgłoś pojazd', 'Moje oferty', 'Zgłoś dłużnika', 'Zamówienia i faktury', 'Pomoc', 'Forum', and 'Pobierz Trans'. A search bar is visible with fields for 'Email lub TransId', 'Hasło', and 'Zaloguj'. Below the search bar, there are filters for 'Szukaj ofert' and 'Wybierz kraj'. The main content area displays a table of offers.

Info	Załadunek	Rozładunek	Pojazd	Zgłoszono	Ważne do	Opcje
Wolny ładunek Cena frachtu: 2 PLN Zak.: 27.11.14 Rozł.: 27.11.14	Polska Kalisz 62-800	Polska Konstantynów Łódzki 95-050	1.67t Firanka	26.11.14 godz. 23:56	27.11.14 godz. 06:00 Pozostało: 5 godz. 49 min.	Rozmowa (pl) Pokaż szczegóły
Wolny pojazd Stawka za 1km: 1.70 EUR Wol. od: 28.11.14 Wol. do: 28.11.14	Polska Gdańsk 80-048	Polska Zgierz 95-100	5t Firanka dł: 6.7m Winda	26.11.14 godz. 23:49	28.11.14 godz. 06:00 Pozostało: 29 godz. 49 min.	Rozmowa (pl) Pokaż szczegóły
Wolny pojazd Stawka za 1km: 10000 EUR Wol. od: 27.11.14 Wol. do: 28.11.14	Polska Sochaczew 96-500	Polska Kielce 25-001	27t Wywrotka dł: 8.5m	26.11.14 godz. 23:27	28.11.14 godz. 06:00 Pozostało: 29 godz. 49 min.	Rozmowa (pl) Pokaż szczegóły
Wolny pojazd	Polska	Polska	25t Wywrotka	26.11.14 godz. 23:27	28.11.14 godz. 06:00	Rozmowa (pl) Pokaż szczegóły

Figure 3. The screenshot of the Trans.eu system²⁸

The screenshot shows the Timcom.com website interface. At the top, there is a banner for 'Truck & Cargo'. Below the banner, there are navigation tabs for 'Enter vehicle offers', 'Vehicle offers - Summary', 'Enter freight offers', 'Freight offers - Summary', 'Enter warehousing offers', and 'Warehousing offers - Summary'. The main content area displays a search form for freight offers. The search criteria include 'Load to be offered' (On: 18.09.2013, 7:00 - 9:00), 'For destination' (Country: GB - Great Britain, Postal code / Town: BR3 4 London), 'Description of freight' (Length: 13.6 m, Weight: 10 to, Loading places: 1, Price of freight: 750 EUR), and 'Required type of vehicle' (Combination truck, Semitrailer truck, Small vehicle, Type of body: Curtainsider). Below the search form, there is a table of offers.

Date	from	to	L	G	Type of body	A	G	S	K	!	Price	
20.09.13	DE	01000 Dresden	PL	Warschau	6.6 m	8.0 t	Curtainsider	G	S		450	EUR
21.09.13	PL	00-001 Warszawa	CZ	Marienbad	7.7 m	2.5 t	Curtainsider	G	S		500	EUR
21.09.13	GB	BR3 4 London	FR	Paris	13.6 m	24.0 t	Curtainsider	G	S		650	EUR
23.09.13	GB	BT10 0 Belfast	GB	York	2.5 m	4.5 t	Curtainsider	G	S		270	EUR

Figure 4. The screenshot of the Timcom.com system²⁹

²⁸ http://dlafirmy.info.pl/3866_nowa_wyszukiwarka_ofert_na_trans-ie.htm.

²⁹ <http://www.timcom.pl/Gie%C5%82da-Transportowa/Gie%C5%82da-%C5%82adunk%C3%B3w>.

The analyzed EFXs allow users to find cargo or vehicle space, use a well-tried database of contractors, claim entitlement, etc. In Table 7. the two most popular (from the user point of view) systems will be presented according to the functionality aspects.

Table 7. The comparison of functionality of selected EFXs

Criterion	Timocom.com	Trans.eu
Freight Exchange	+	+
Vehicle Exchange	+	+
Calculation of transport rates	+	+
Checking contractors	+	+
Tracking	+	+
Managing Financial claims	+	+
Number of languages	25	19
Communicator	-	+
Cost (per month)	139.9 euro	79.0 euro

Source: own elaboration

The analyzed EFXs are similar in functionality. They provide users with the possibility to conclude transactions via the Internet, they require registering a new user and enable them to follow their standing in the system, they make it possible to recover debts, monitor traffic, etc..

Thus, in its base layer, each of the analyzed EFXs provides a market standard. What distinguishes the two systems is the price and the offer by Trans.eu own dedicated communicator. The difference in the price constitutes 56% and is associated primarily with a larger volume of business operation by Timocom.

11. The Electronic Freight Exchange Advantages and Disadvantages

From a business point of view, the role of EFX is to link those with a free cargo space and those wanting to carry a certain load. EFX earns fees charged to users. In exchange, it offers software (system) supplemented with a set of appropriate functionality. The flow of information is presented in Figure 5.

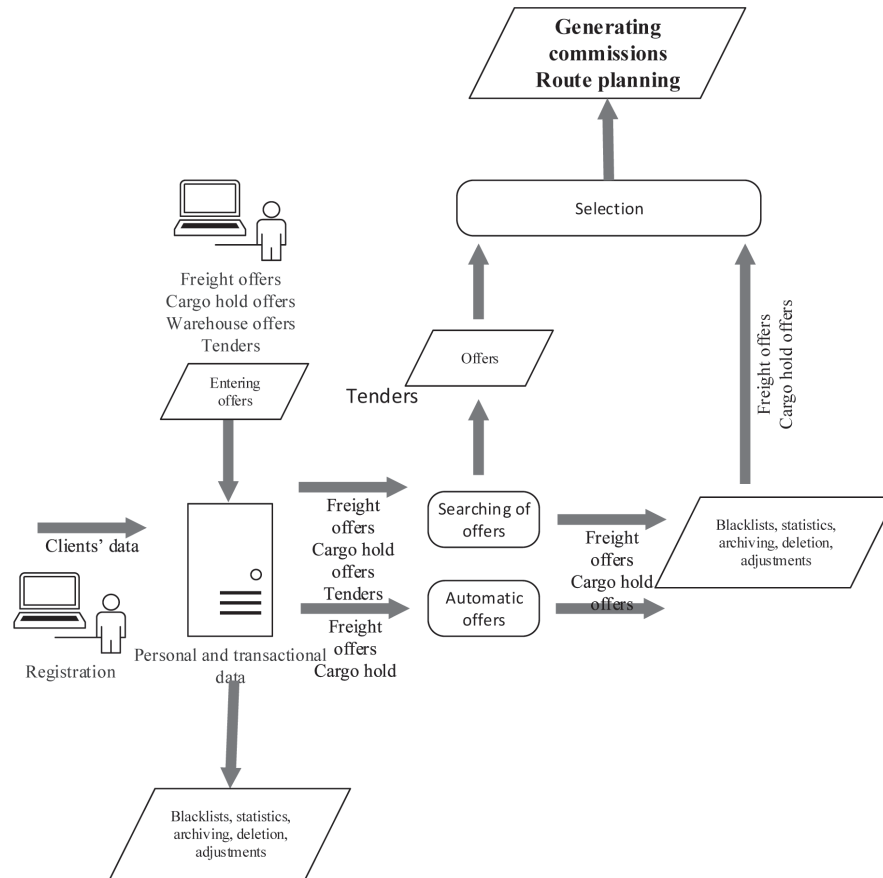


Figure 5. The model of EFX utilization³⁰

According to EFX statements, they enjoy great popularity among carriers and manufacturers. A confirmation of this point of view may be the statements found during the research of forums of TSL (among others: Transport.pl, spedycje.pl, forum.gazeta.pl, trans.info, business forum.pl). A total of more than 200 statements, opinions, comments of Trans.eu and Timcom.com users were analyzed. On this basis, it is possible to distinguish specific advantages and disadvantages of EFXs.

Thus the benefits are as follows:

- The possibility of acquiring new customers,
- The opportunity to complete the return freight,

³⁰ http://scholar.google.pl/scholar_url?hl=pl&q=http://www.pp.bme.hu/tr/article/download/1857/1122&sa=X&scisig=AAGBfmoUoaVuG_Um_HkKUzj3L4rZuAnIdQ&oi=scholar&ei=R6pxVMHSDsjCywPqy4CYCg&ved=oCCMQgAMoAjAA.

- Access to pre-verified customers,
- High accuracy of data,
- Help in the recovery of unpaid bills,
- Reduction of transaction costs (especially in international transport), - Diversification of counterparties,
- Free of charge test of the system to make the final decision about the use of the EFX.

At the same time the use of EFXs entails certain negative aspects. These include the following:

- They generate high pricing pressure on carriers,
- They require regular payments (subscription), regardless of the scale to use in a given period,
- Selection of a particular EFX in their large numbers and similar functionality can be problematic.

12. Conclusions

The authors of the paper want to present their point of view and, based on the research of other authors, an overview of EFXs. EFXs depend on the level of development of each region. According to a current study, EFXs are widely used in large companies and SMEs. This paper shows the advantages of using EFXs and the use of these systems in business.

The system has become more effective by optimizing space utilization in the warehouse, increasing productivity, effectively coordinating people, the equipment schedule and route transportation for low cost and high revenue, and minimizing the errors. The analysis presented above shows that among companies in Poland the most popular EFXs are Trans.eu and Timocom.pl. In transport companies, a secure model of EFX should be developed with extra options, especially such that allow the use of mobile technologies and business intelligence.

As part of the carried out research the authors specified the main advantages and disadvantages of using EFX from the point of view of transport companies, freight forwarders and transport ordering. The summary of the advantages and disadvantages clearly indicates the dominance of benefits over shortcomings. This is especially true with regard to those seeking free cargo space. For carriers, participating in EFX involves one significant drawback. In the context of a very large number of bidders and the ease of comparison of their prices, the crucial role in the selection of the contractor is played by the cost of transport. This causes the erosion of margins and reduced prices to a level of dumping. On the other hand, for carriers without the return freight, freight exchanges are the ideal source of a supplement charge. Taking all this into consideration, further development of EFXs should be expected.

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